# PREPRODUCTION INITIATIVE-NELP
# INFRARED CAMERA LEAK DETECTOR
# TEST PLAN

## SITE: NAS JRB NEW ORLEANS

### 1.0 OBJECTIVE

This test plan describes the data collection procedure for the infrared camera leak detector, which, under this application, is being used to detect harbor oil spills. The data will be used to determine the efficiency, effectiveness, and overall performance of the unit. In addition, the data will be analyzed to determine if a characteristic can be shown that will help identify detected spilled materials.

### 2.0 DESCRIPTION

The Amber-Raytheon Radiance PM is a 10-pound, hand-held, portable infrared camera designed to provide a more efficient alternative to visual inspection of harbor waters for oil spills that occur at night. The unit is a high-resolution, 3 to 5 micron, infrared, focal-plane-array camera with an attached 4" active matrix color LCD display. The unit includes a 4 MB Type 1 PCMCIA card to store 8- or 12-bit images.

### 3.0 TEST PLAN

This test plan will be used to evaluate the effectiveness of the infrared camera leak detector.

### 3.1 Test Description

The Radiance PM will be operated according to manufacturer's instructions. Data will be recorded using this unit every time a night inspection reveals a spill. The AmberTherm Analysis and Report Generation Software will be used to analyze the images that are downloaded from the unit to floppy disks and the site computer hard drive. Data saved on the 3.5" floppy disks will be mailed to UTRS, Inc.

### 3.2 Data Collection

The operator will use the unit to scan harbor waters. While scanning the harbor, any identified infrared images will be recorded on the PCMCIA Type 1 "flashcard." The captured image should define the entire boundary of the spill. Either 27 12-bit images or 54 8-bit images can be stored on one card. For the purpose of this test plan, 12-bit images will be captured. The collected images will be loaded onto the designated computer. The following steps should be taken to transfer the images to floppy disk and the computer hard drive:

1. Remove the flashcard from the camera and insert it into the computer PC card socket.

2. Double click on the AmberTherm icon in the Windows Program Manager.

3. Double click on the AmberTherm icon in the AmberTherm window.

4. Click the lightning bolt button, which is located at the upper right-hand corner of the screen, to invoke a "save images" dialog box. A window labeled "flash," (for Radiance PM flashcard image transfer) will appear.

Only one file name is needed per day to save all images in the FTS format specified for Amber IR images. Each image will be saved with a filename that indicates the Julian date. For example, if the operator enters 96045.FTS as the base file, the software will name each consecutive image as follows: 9604501.FTS, 9604502.FTS, 9604503.FTS, etc. These files represent four different images recorded on February 14, 1996. After entering the file name, click the OK button. All images will be transferred from the flashcard to the disk. The files must also be saved to the computer hard drive.

Data will also be collected (recorded by hand) during each investigation using the attached tables.

### 3.2.1 Instructions For Completing Table 1

- **Date:** The date the IR Camera was used. This will be recorded on a daily basis.
- **Time Period:** The period of time during which 1 day's images were recorded (*e.g.,* 8:00 p.m. to 10:00 p.m.).
- **Frequency of Use:** The number of images recorded on a given day during the specified time period. Indicate "0" if no images were recorded. (Please complete Table 2 with an entry for each image collected during a particular time period.)
- **Downtime**
  - **Time Period:** Record periods when unit was not in use. Please indicate the number of day(s) the unit was not in operation.
  - **Reason:** Explain whether downtime was due to repairs, maintenance, service (such as recalibration), or adverse weather conditions.
- **Qualitative Assessment:** Provide a narrative evaluation of the unit. Briefly discuss:
  - Efficiency of the unit (*e.g.,* time and cost savings)
  - Ease of use and the unit's ability to successfully interface with other site operations
  - Overall satisfaction with the unit.

### 3.2.2 Instructions for Completing Table 2

- **Date:** The date the image was recorded.

- **Image Number:** Image number (sequential, in the order the images were recorded).

    - **Location:** Specify the location of the identified oil spill.

    - **Visual Inspection**

        - **Visual Inspection Positive:** Perform a quick visual inspection of the area identified as a spill by the IR camera. Indicate "yes" or "no" as to whether the spill was readily identifiable without the IR camera. Also indicate "yes" or "no" as to whether a light source was utilized.

        - **False Positive:** If, upon visual inspection, the "oil spill" located by the IR camera is not oil, make a general identification of type of substance or object (such as "hot waste water") or state whether it is "unidentifiable."

## 4.0 REPORTING

The data entry forms are a concise method of data collection. Forms should be completed on a daily basis. Data will be collected for 1 year. During this time, periodic status reports on the testing will be submitted to NAWCADLKE. The final report will include detailed results and observations, assess the efficiency and cost-effectiveness of the unit, and evaluate its ability to interface with site operations.

**Table 1**

| Date | Time Period | Frequency of Use | Downtime | |
|---|---|---|---|---|
| | | | Time Period | Reason |
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**Qualitative Assessment*:**
Please comment on the effectiveness and efficiency of the unit.

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* Attach additional sheet if needed.

## Table 2

| Date | Image Number | Location | Visual Inspection | | |
|---|---|---|---|---|---|
| | | | Visual Inspection Positive | | False Positive |
| | | | Readily Identified | Light Source Utilized | |
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